The City of Greenwood

Cottonwood (Tracy Ditch)

The Tracy Ditch project is located just west of US 31 along Stop 18 Road. This project is the result of flooding upstream from the Tracy Ditch and the detention basins' inability to discharge into the Tracy Ditch. This causes the storm sewers to backup and also cause severe street flooding. There have been several instances where sections of Stop 18 were closed, or travel was restricted due to the flooding.

One of the reasons for the backup of Tracy Ditch is the build up of sediment and debris at culverts and within the channel itself. This build up inhibits the ability for the water to flow properly, and does not allow pipes that outlet into Tracy Ditch to drain properly.

This project is designed to provide a multi-year maintenance plan for the Tracy Ditch. This maintenance plan will allow the ditch to flow more efficiently, and will also help to relieve the street flooding caused by the detention pond outlet pipes backing up. Additionally, this plan will include the inspection and cleaning of the outlet pipes from the detention ponds that connect into the Tracy Ditch. Routine inspections of the ditch will allow the City to evaluate the replacement or repair needs of those particular storm sewers, and will help prevent the system from backing up.

Highlights

Project: Cottonwood (Tracy Ditch)
Estimated Project Cost: $1,100,000
Status: Planning

Installation of native plantings and rip-rap may also be implemented along the banks and at pertinent areas of Tracy Ditch. Not only will these plantings and rip-rap provide a natural look to the channel, but they will also provide erosion protection that will alleviate sediment build up within the flow path.

Legend

- Ponds
- Streams
- Existing Storm Sewer
- Proposed Ditch Regrading & Clearing
- Proposed Video Inspection

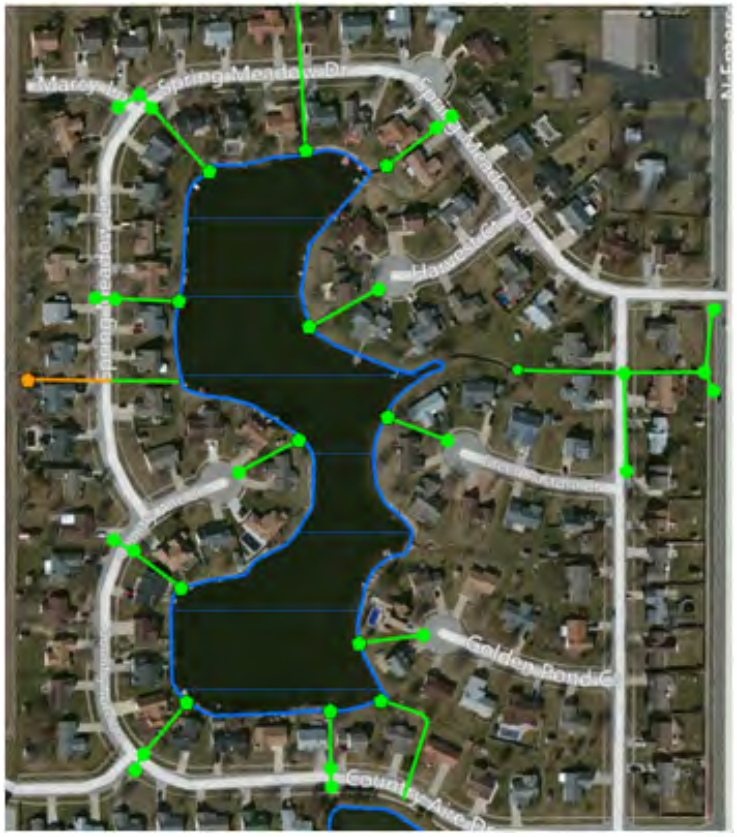
The City of Greenwood

Country Aire Subdivision

The Country Aire project is located on the east side of Greenwood, between Interstate 65 and Greenwood Municipal Airport. The project is located within the Country Aire Subdivision, which is served by both sanitary sewer and storm sewer.

The main drainage pipe for the large detention pond is a large diameter corrugated metal pipe. Unfortunately, the metal pipe has begun deteriorating to the point of causing sinkholes within the yards of the Country Aire Subdivision. A section of pipe was recently replaced between the detention pond and the road. During the initial field visit additional sinkholes were found in the yard between the road and the farm field outside the subdivision, which indicated that the pipe has further deteriorated.

The metal pipe used not only in this neighborhood, but throughout the City has become a continual maintenance issue for the City over the last several years. This project will further inspect all of the pipe within the neighborhood by videoing the condition inside the pipe. After reviewing the video recommendations will be made to either replace or provide a lining material in all of the failing metal pipe in the subdivision.



Highlights

Project: Country Aire Subdivision
Estimated Project Cost: $300,000
Status: Planning

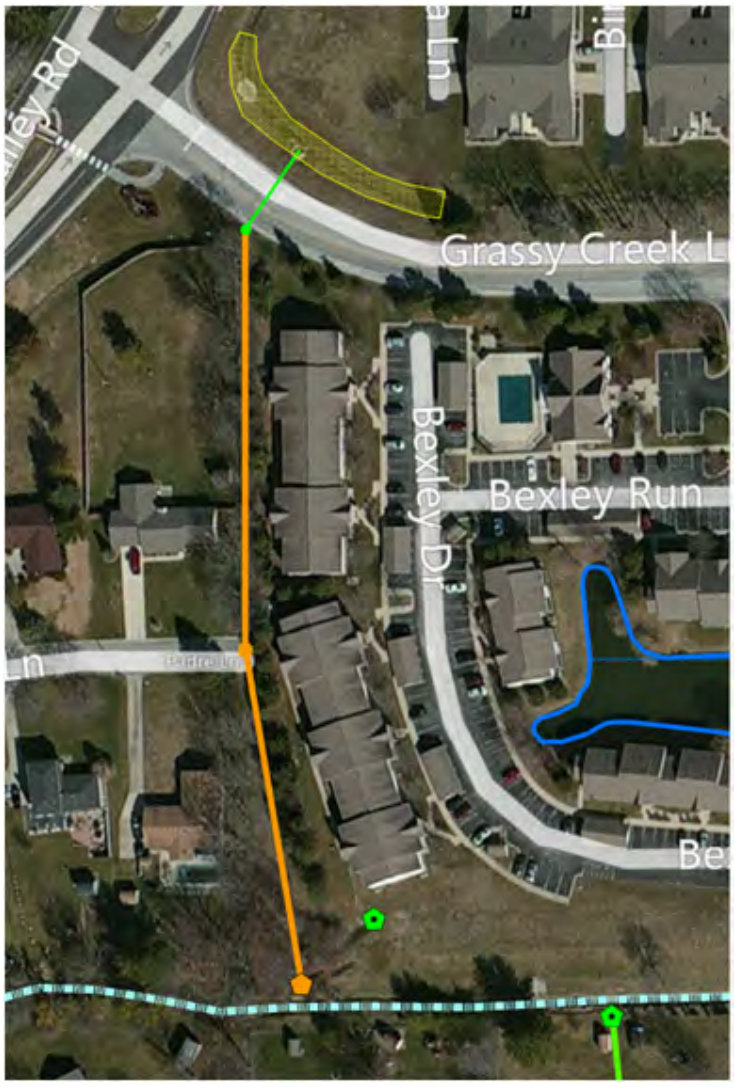
The City of Greenwood

Eden Estates

The Eden Estates project is located on the east side of the City, just west of Interstate 65. The major intersection within the project is between Emerson Avenue and Grassy Creek Lane, which is served by both sanitary sewer and storm sewers. There is also a substantial road side ditch along Grassy Creek Lane and Emerson Avenue, which eventually drains into several large detention ponds.

A section of pipe running along the property line between the apartment complex and a residential subdivision has failed. Trees have penetrated the section of pipe, causing the upstream system to backup and streets to flood. The roadside ditch is also subject to erosionand potential slope failure.

The proposed project will involve the lining of the pipe with the process commonly referred to as Cast In Place Pipe (CIPP). This type of liner system will insert a resin impregnated felt liner through the damage pipe, and will cure within the existing pipe. This will slightly reduce the diameter of the pipe; however, it will increase the efficiency of the pipe. This is accomplished by smoothing out the flow channel, and removing the flow restrictions (i.e. roots). The ditch will be fixed through minor regrading and re-establishing the banks with native vegetation where applicable.



Highlights

Project: Eden Estates
Estimated Project Cost: $190,000
Status: Planning

Legend

- Storm_Outfalls
- Storm_Manholes
- Storm_Pipe
- Sanitary_Manholes
- Lift_Stations
- Sanitary_Pipe
- Flood_Zone
- Ponds
- Streams

The City of Greenwood

Endress Place Development

The Endress Place Development project is located on the south side of the City, and just east of US 31. The area is currently served by standard ditches and standard storm sewers. There are several culvert pipes that are either completely crushed or partially silted in, which serve to move runoff across the development. This causes the ditch to backup and flood behind the businesses located on the east side of the project area. There is also some concern with the capacity of the existing ditch due to debris and sediment build up as the area continues to develop.

It is anticipated that this project will be completed in multiple phases. The different phases for this project will produce multiple levels of flooding protection, and will allow the City to spread the costs of this project out over several years.

The first two phases will consist of a replacing the three broken 24-inch CMPs under Endress Place. These pipes are in various states of failure, and will be replaced with a single structure. Due to the shallow depth of the existing pipes, it is recommended that the three pipes be replaced with a single, concrete box structure. This will remove the possibility for multiple pipe failures and should also prevent the structure from becoming damaged from the semi traffic. This phase will also regrade the ditch east of Endress Place, and will increase the capacity of the ditch to the west of the ditch. This will be done in conjunction with a study of the drainage characteristics of the upstream and downstream areas of the Endress Place Development. Development on the existing storm sewer system and provide recommendations for additional flood mitigation.

Legend

- Storm_Outfalls
- Storm_Manholes
- Storm_Pipe
- Sanitary_Manholes
- Lift_Stations
- Sanitary_Pipe
- Flood_Zone
- Ponds
- Streams

Highlights

Project: Endress Place Development
Estimated Project Cost: $140,000
Status: Planning

The City of Greenwood

Flood Damage Reduction Projects

Bomar Lane

The Bomar Lane project is located south of Fry Road along Bomar Lane, in the northwest corner of the city limits. This project is a result from the flooding that occurred during the year 2008, which caused several homes to become flooded. In fact, according to FEMA flood maps, there are approximately 14 homes within the floodway.

Though there are numerous homes within the floodway, there are four homes of concern. Three of these homes received significant damage during the flooding in 2008, and nearly all the home owners within the floodway required extraction during said flooding. Not only are homes damaged during flooding, but damage to secondary structures also occurs. During flooding debris is washed through the low lying areas and destroys fences and storage sheds. This damage is a result of limited drainage structures within this area, which is due to the relief from Fry Road to Pleasant Creek. The only drainage structure is a concrete culvert pipe that drains the cul-de-sac at the end of Bomar Lane.

Southern Green

The Southern Green project will deal with flood mitigation of several homes located west of the intersection between East Stop 18 Road and South Emerson Avenue. These homes are drained via the large roadside ditch along Stop 18, and a storm sewer within the right-of-way. Though there appears to be adequate capacity within the storm sewer to handle the road right-of-way, it appears as though additional offsite drainage could be contributing to inundation of the storm sewer and road side ditch. It also appears as though the homes have a lower finished floor elevation than indented. During moderate to heavy rain events, the surface runoff often comes very close to entering the homes.

The proposed project will construct a large detention basin at the southeast corner of the intersection, which should be sized to collect runoff from a portion of the surrounding developments, and the majority of the farm field. This basin will either be a dry bottom detention basin, or a vegetated basin. With the vegetated basin, it may be possible to partner with the City of Greenwood Park's department and create a small trail head or park area.

Highlights

Project: Flood Damage Reduction Projects
Estimated Project Cost:
Bomar Lane: Pleasant Creek Project may correct
Southern Green: $300,000
Status: Planning

The City of Greenwood

Green Valley

The Green Valley project is located on the west side of Greenwood, just east of SR 135. The project area, which is located in the Green Valley subdivision, is served by a sanitary sewer, ditch and culvert storm system. The limited pipes that were installed seem to be original with the subdivision, and are reaching their effective service life.

LEGEND

- Hybrid Ditch
- Proposed Storm Sewer

Off-site flows from the adjacent areas cause additional surface runoff to fill and back up the storm sewer system, and cause flooding throughout the subdivision. There are some large road side ditches throughout the project area; however, these ditches still rely on the storm sewer, which may not be sized adequately, to convey the offsite flow.

This project is designed to upgrade the existing storm sewer system by adding hybrid ditches and conventional storm sewer throughout the Green Valley subdivision. This upgraded system will be designed to handle the additional runoff from the adjacent areas, which currently inundates the existing system.

There appears to be room available between the edge of pavement and the property line, and there are currently roadside ditches throughout the neighborhood. A hybrid ditch uses natural swales and perforated pipe to drain water away from yards and into the ground. During heavy rains, excess water that is unable to soak into saturated ground will flow into a traditional storm drain system via a raised inlet. The system helps reduce flooding and promotes infiltration into the ground, naturally cleaning the water. This infiltration system slows down runoff into streams and drainage channels which helps limit erosion.

Highlights

Project: Green Valley
Estimated Project Cost: $1,570,000
Status: Planning

The City of Greenwood

John Bonner (Fry Road and Loews Boulevard)

The John Bonner project is located on the north side of Greenwood, southwest of the Greenwood Mall. The existing storm sewers consist mainly of two small diameter corrugated metal pipes, and a large roadside ditch on the north side of Fry Road. The two pipes along with the structure within the roadside ditch are of particular concern. The bottom of the north pipe has completely eroded away, and is at risk of failure.

At one point the pipe joints were grouted and sealed, in hope that the pipe wouldn't collapse and cause the road to fail. The headwall/ inlet structure is also a concern, because of erosion around the inlets. This project is designed to remediate the erosion within the roadside ditch along Fry Road. This alternative will regrade the ditch so that it is drained at grade. Additionally, the ditch side slopes will not be as steep, which will remove another potential safety hazard. The two existing 24-inch pipes will be replaced with a single 36-inch pipe.

Legend

- Ponds
- Streams
- Proposed Storm Sewer
- Existing Storm Sewer

Highlights

Project: John Bonner
Estimated Project Cost: $890,000
Status: Planning

The City of Greenwood

Lakeview Additions

The Lakeview Additions project is centrally located between US 31 and Interstate 65, just off of Main Street. The drainage in the area is currently being handled by both conventional storm sewers and rear yard ditches, which eventually drain into the large detention basin. The major areas of concern within this project are the ditches located in the rear of the yards. These areas are encroached by residential fences and overgrown vegetation. The flat slopes along the ditches allow for standing water and mosquito breeding areas. There is also some erosion within the project area, which is caused by the ditch not having proper inlet and outlet protection.

This project will involve ditch restoration and some stabilization. The rear yards could be retrofitted with a hybrid ditch in order to eliminate the standing water, and allow water to be conveyed downstream. A hybrid ditch uses natural swales and perforated pipe to drain water away from yards and into the ground. During heavy rains, excess water that is unable to soak into saturated ground will flow into a traditional storm drain system via a raised inlet. The system helps reduce flooding and promotes infiltration into the ground, naturally cleansing the water. This infiltration system slows down runoff into streams and drainage channels which helps limit erosion. Rip-rap will also be installed along inlet and outlet pipes to protect against erosion.

Legend

- Storm_Outfalls
- Storm_Manholes
- Storm_Pipe
- Sanitary_Manholes
- Lift_Stations
- Sanitary_Pipe
- Ponds
- Streams

Highlights

Project: Lakeview Additions
Estimated Project Cost: $18,000
Status: Planning

The City of Greenwood

Northern Park

The Northern Park project will deal with the Jolly Brook, which has caused some severe erosion at the intersection of Meridian Street and Park Lane. The stream has completely eroded the vegetation that was used for stabilization, and has also caused the storm sewer to back up and flood out this intersection.

The proposed project will help to eliminate erosion and backup issues by utilizing hearty natural plantings along the ditch as much as possible, and use riprap at the pipe discharge location. The ditch will also be regraded to eliminate low points along the ditch, which should help increase the hydraulic efficiency of Jolly Brook.

Legend

- Streams
- Existing Storm Sewer
- Proposed Ditch Regrading
- Proposed Pipe Cleaning

Highlights

Project: Northern Park
Estimated Project Cost: $30,000
Status: Planning

The City of Greenwood

Old City Park

The Old City project is located within downtown, just east of US 31. The storm sewers within the project area drain into Pleasant Creek. Pleasant Creek serves as the ultimate outfall for a large portion of the storm sewer systems within the City of Greenwood, and north of the Old City project is no exception. There is approximately 1,700 acres that drain into Pleasant Creek, which includes the Greenwood Municipal Airport and a significant amount of farm fields. This area causes a large amount of flow to enter the Old City project area, and has caused significant bank erosion and flooding. During the 2008 flooding event, a significant portion of property within the project area was inundated for several days. This flooding caused significant damage to the park property, and required significant repurposing of the area.

Another cause for concern within the project area is associated with a failing retaining wall. This is of particular concern, because of its potential safety hazard. Should the retaining wall fail, it is possible that a significant portion of the parking lot could fall into Pleasant Creek. This would cause a loss of capacity within the channel, and could potentially cause flooding upstream of the retaining wall. In the short term some bank stabilization and erosion control may be completed. A structural investigation into the potential solutions to repairing or potentially replacing the retaining wall will be conducted by a structural engineer. The structural engineer will provide feedback and a recommendation on fixes for this wall.

Because large scale flood remediation is very expensive it is typically part of federal projects completed by the Army Corps of Engineers. Currently the Army Crops of Engineers is investigating a large scale flood prevention project upstream of the Old City Area, which is discussed in the Pleasant Creek Field Project.

Legend

- Storm_Outfalls
- Storm_Manholes
- Storm_Pipe
- Flood_Zone
- Streams

Highlights

Project: Old City Park
Estimated Project Cost: $875,000
Status: Planning

The City of Greenwood

Pleasant Creek Field

This project was part of an Army Corps of Engineers study of the Pleasant Creek basin authorized under Section 205 of the 1948 Flood Control Act. The study, which was started in the late 90's, was eventually completed in 2006. The study looked at possible flood damage to 159 structures within the flood zone along Pleasant Creek, of which 133 structures were residential, 23 were commercial, and the remaining 3 structures were public facilities. A 1% chance flood event, which is a 100-year flood, is estimated to affect 129 structures and cause over $5.5 million in total damages; approximately 40% of this cost coming from damage to commercial facilities, and the remaining 60% to residential. The 0.2% chance flood event, which is a 500-year flood, is estimated to affect 144 structures and cause over $5.9 million in total damages.

Numerous options were studied at a feasibility level, but many of them became impractical when looking at the cost to benefit ratios. Ultimately the study settled on an in-line detention basin along Pleasant Creek. The detention basin will be a dry bottom reservoir that would detain excessive runoff during periods of high rain fall, and would then drain back into Pleasant Creek. This basin would reduce the chance of flooding by as much to 70% within the Pleasant Creek Flood Area, and could possibly have an effect on flooding along Pleasant Run. The basin will also have a positive effect on the water quality, some of the floodwater will naturally infiltrate out the bottom of the basin prior to draining back into Pleasant Creek.

Legend

- Streams
- Existing Storm Sewer

Highlights

Project: Pleasant Creek Field
Estimated Project Cost: $7,750,000
Status: Planning

The City of Greenwood

Pleasant Run (Greenwood Mall)

The Pleasant Run project is located just to the east of the Greenwood Mall, which is just south of County Line Road. The area is served by both sanitary sewers and storm sewers.

A portion of the area is also within the 100-year floodplain, which is what brought about this project for consideration in this Master Plan. During the 2008 flooding event there were several businesses that incurred flood damage, and the intersection between Madison Avenue and Greenwood Park Drive was impassable. The pipe that drains the intersection could be upsized to convey the runoff out of the intersection at a faster rate. Underground detention or retrofitting the mall parking lot with rain gardens in the islands may also be utilized to store water until it can be released downstream.

Legend

- Storm_Outfalls
- Storm_Manholes
- Storm_Pipe
- Sanitary_Manholes
- Lift_Stations
- Sanitary_Pipe
- Flood_Zone
- Streams

Highlights

Project: Pleasnat Run (Greenwood Mall)
Estimated Project Cost: $1,000,000
Status: Planning

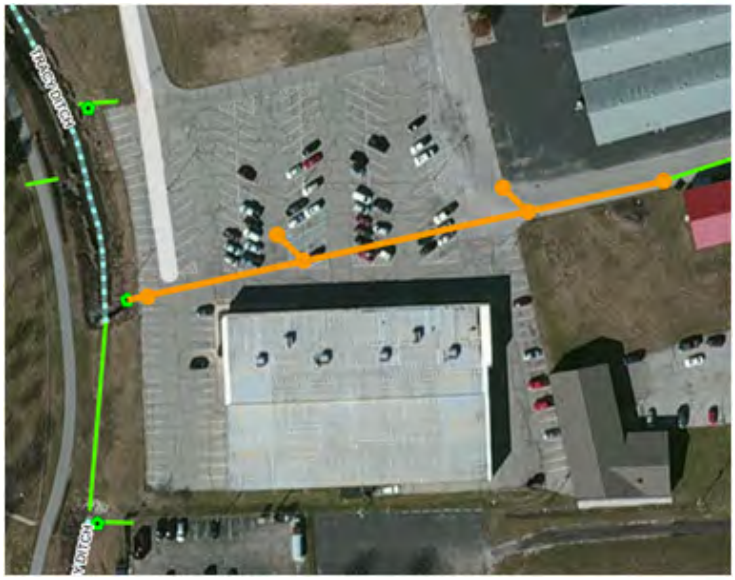
The City of Greenwood

Southern Bowl

The Southern Bowl project is located just north of the Cottonwood project. The City is responsible for the maintenance of the storm sewer pipe in this parking lot.

The main cause for concern within this project area is the main drainage pipe, which runs across the middle of the Southern Bowl parking lot. This pipe is approximately 5-feet or more in diameter. This pipe drains some of the US 31 corridor, the frontage road leading up to the Southern Bowl, and much of the parking lot. During heavy rain events the pipe has backed up and caused flooding within the Southern Bowl parking lot, which can get severe enough to cause small vehicles to become buoyant. The pipe appears to be failing and sink holes are forming over the pipe within the parking lot.

The proposed project will add several structures; which will ensure that the inlets no longer directly connect into the main storm trunk line. This will allow the City staff to more easily perform routine maintenance and replace smaller sections of pipe should a failure occur.



Highlights

Project: Southern Bowl
Estimated Project Cost: 360,000
Status: Planning

Legend

- Streams
- Existing Storm Sewer
- Proposed Pipe Replacement

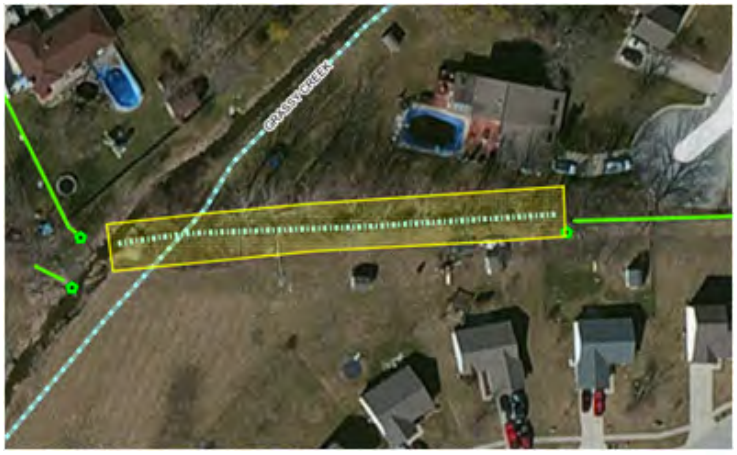
The City of Greenwood

Valle Vista

Valle Vista neighborhood has a variety of storm water issues, mainly a result from infrastructure failure. The first issue is due to a section of pipe that has been crushed and has become clogged with debris, and causes the stormsewer to backup. This section of pipe serves as the ultimate outfall for a significant amount of surface runoff, and has required routine maintenance to insure that the pipe is not clogged.

The second issue is due to a ditch that has become overgrown and is experiencing erosion and sediment build up. This causes the storm sewer system to backup, and force surface runoff to find an alternative route to Grassy Creek or the detention basin. This ditch also holds water after rain events, and creates breeding conditions for mosquitoes. This is of particular concern with the recent rise in West Nile virus, and the proximity to a number of homes.

The proposed projects will replace the existing pipe with a new, more hydraulically efficient pipe. This pipe will also be more resistant to crushing than the previous metal pipe, which should prevent other issues from arising. The project will also regrade the existing ditch, and re-establish the banks with natural seeding. This project will also partially clear out the ditch of nuisance vegetation.



Legend

- Streams
- Existing Storm Sewer
- Proposed Pipe Replacement
- Proposed Ditch Regrading

Highlights

Project: Valle Vista
Estimated Project Cost: $50,000
Status: Planning